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turn to the excellent topographic maps of Algeria for accurate representations of features, which seem from the descriptions to resemble closely some of the Moroccan types of land forms. We have in the present paper a series of eighteen air photographs, comprising both oblique and vertical views and accompanied by clear explanatory descriptions, which form an exceedingly valuable aid in the study both of Moroccan geography and of land sculpture in general. For the photographs are prepared not merely as views of Morocco but also as illustrations of the mechanism of denudation processes acting on varied structures in a rather arid climate. The views are chosen from several thousand taken in reconnaissance flights by the Moroccan military aviation service. We are informed that the views show typical—and never exceptional—landscapes of the large zones they represent. These zones are as follows: The Meseta, with its two main types of country, (1) the dissected plateaus of flat-bedded sediments and (2) the Jebilet, or residual hills of crystalline rocks which project through sediments; the Central Atlas Mountains; the plain of the upper Moulouya to the east of these ranges; the Great Atlas Mountains of the southwest; and the Rif in the north. A sketch map shows the location of each view.

We find the Central Atlas to be a range of simple structure—anticlinal ridges, monoclinal valleys, and antecedent gorges. The plain of the upper Moulouya is revealed as an arid region, slightly dissected by wadis with irrigated strips along them and with flat-topped tables between them. The Great Atlas south of the Moulouya again shows marked simplicity of form as well as great aridity. In the Rif a great contrast to the other ranges is presented. Evidently the structure is much more complicated. The ranges are dissected to a much greater extent; and in the photographs we see mature valleys, wide, waste-filled basins, and braided rivers.

In the oblique panorama of the dissected plateaus of the Meseta we have an excellent example of the natural contours produced by the alternate outcrop of strong and weak strata, a feature which proved so useful in plotting of form lines on maps prepared mainly from air photographs during the war in Macedonia, Gallipoli, Palestine, and Mesopotamia.

#### A GEOGRAPHICAL INTERPRETATION OF EARLY BIBLICAL HISTORY

**WILLIAM WILLCOCKS. From the Garden of Eden to the Crossing of the Jordan.** viii and 93 pp.; maps. Printed by the French Inst. of Oriental Archaeology, Cairo, 1918. 5s. 10 x 6½ inches.

Interesting and suggestive is this geographic interpretation of the sacred books of Genesis and Exodus by Sir William Willcocks, irrigation expert, designer of the Assuan dam in Egypt, and director of the recent British reclamation works in lower Babylonia. For thirty-four years the author has studied on the spot every episode in the Bible concerned with irrigation. He has come to the conclusion that the stories of the Garden of Eden and Noah's Flood in Mesopotamia, like that of Joseph's famine in Egypt, the ten plagues, and the exodus of the Israelites, all had to do with the control of water in these rainless lands—with irrigation systems established, tampered with, or destroyed. Along the Euphrates he found only two districts which could be irrigated by free flow all the year round and which therefore might have been the scene of the Garden of Eden. One was the reclaimed marshland above the Persian Gulf near the ancient Eridu, site of the Sumerian Garden of Eden. The second lay on the middle Euphrates between Anah and Hit, where a series of cataracts, now much degraded, enabled the benches of alluvial deposit above the present flood line to be irrigated by water drawn off above the falls. Here the author locates the Semitic, or biblical, Garden of Eden. The four distributaries of the river of Eden he identifies as the four offshoots of the Euphrates below Hit, namely, the Kerbela branch, Hindia, Saklawia, and Euphrates proper; and he explains the expulsion from Eden by the degradation of the cataracts below the level of the river terraces, which put an end to irrigation and made the banks revert to desert. It is a question, however, whether two sites for the Garden of Eden are necessary, since the Semitic story was clearly borrowed from the earlier Sumerian version.

The author is most interesting and convincing when he uses his expert knowledge to interpret the Egyptian stories of the Bible. With Cope Whitehouse he places the fortress of Ha-Uar, key of Lower Egypt in the Hyksos period, not at the gateway of the ancient military route from Philistia but at the dam across the canal connecting the Nile with Lake Moeris; because an enemy in possession of this strategic point could cut the dam, draw off the Nile into the Moeris depression, and deprive Lower Egypt of its water supply. This was the explanation of Joseph's famine. At that time Ha-Uar was the frontier fortress

between the Hyksos rulers of Lower Egypt and the Pharaohs of Upper Egypt. Joseph probably learned from a fellow prisoner of the plans being made by the Theban king to seize Ha-Uar and the regulator of the canal. Hence his prediction of the year-long famine, and the storing of grain and provisions before the campaign from the south should finally be set on foot. At last the catastrophe came: the regulating dam at Ha-Uar was seized and cut by the Theban forces; the Nile failed to overflow its banks in the Delta, and the predicted famine arrived. The recovery of Ha-Uar several years later was followed by the reconstruction of the dam and the restoration of Lower Egypt to its normal productivity.

In regard to the plagues of Egypt, the author shows that not only did they happen "in the field of Zoan," or northeastern part of the Delta, but that they might happen there today under a combination of low Niles and internal disturbances which should interfere with the irrigation system. He also proves that eight of the ten plagues could have occurred only in this northeastern part of the Delta and that they were inoperative in "the land of Goshen," or Wadi Tumilat district inhabited by the Israelites, because of the abundant subsoil water in this valley. Moses took advantage of a low Nile to tamper with the water channels in the Zoan, or Tanis district, and to bring on a succession of plagues, seven of which followed in a sequence of cause and effect.

The author rejects as impossible the traditional Red Sea route of the exodus from Egypt and revives Brugsch's theory of a course along the Pelusiac branch of the Nile across the Desert of Shur to the Mediterranean, and thence to Edom. This theory he supports with fresh arguments in which Moses again appears as an engineer hero comparable to Heracles. The term translated "Red Sea" in the Bible means reedy sea or reedy river or fluvial bog. Reference in Exodus is to an old arm of the Nile temporarily severed from the main stream, probably the Pelusiac branch, which Moses may have dammed up to flood the upper basin and drown the growing crops of Zoan and which he suddenly released to overwhelm the advancing Egyptians as they were crossing the muddy channel below the dam. Similar miracles performed by Moses as instrument of Jehovah resolve themselves into rational achievements normal to a man familiar, as Moses doubtless was, with the principles of water control.

ELLEN CHURCHILL SEMPLE

#### A MEDIEVAL PERSIAN TREATISE ON GEOGRAPHY

G. LE STRANGE, transl. **The Geographical Part of the Nuzhat-al-Qulūb composed by Ḥamd-Allāh Mustawfī of Qazwīn in 740 (1340).** xix and 322 pp.; index ("E. J. W. Gibb Memorial" Series, Vol. 23, Part II). E. J. Brill, Leyden; Luzac & Co., London, 1919. 8s. 9½ x 6½ inches.

Guy Le Strange has rendered a great service to students of the historical geography of the Near East by bringing out a critical edition of the Persian text together with an English translation of this important work. Western readers are now able to gain a clear and accurate idea of what is probably the most significant medieval Persian treatise on geography.

As a whole, the *Nuzhat-al-Qulūb* consists of an introduction on astronomy and mathematical geography, two non-geographical books, a third book on regional geography, and a conclusion on the marvels of Iran. (See G. Le Strange: *Mesopotamia and Persia under the Mongols, in the Fourteenth Century A.D., Asiatic Society Monographs*, Vol. 5, London, 1903, pp. 11 et sqq.) Much of the *Nuzhat-al-Qulūb* was translated by C. Barbier de Meynard in the notes to his "Dictionnaire . . . de la Perse" (Paris, 1861). Like most of the historical and geographical writings of the Orient, it lacks originality; as Le Strange states in his preface, "Ḥamd-Allāh quotes largely from older authorities, and in most cases we possess the texts which he used. However, in many of his accounts of towns and descriptions of provinces he has added something of his own, from personal observation, to what he has translated not very accurately from the Arabic texts." He "gives a graphic picture of the lands of Iran in the latter days of the Il-Khāns" [Mongol rulers of Persia and Mesopotamia]. The wealth of topographic detail in the chapter on this part of the world is immense, and the account of Asia Minor "is unique and of unknown origin."

Furthermore, the *Nuzhat* cannot fail to appeal to whosoever is interested in the evolution of scientific and geographic knowledge as a whole. As an example of a type of medieval geographical treatise, this edition serves the same purpose for Persian that Reinaud's famous "Géographie d'Aboulféda" serves for Arabic geography, and we may well be sorry that Le Strange has not as yet seen fit to make the work complete in this respect by publishing a